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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/893,985

06/29/2001

Jung-Taeck Eu

49128-5017

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7590

03/18/2004

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WASHINGTON, DC 20004

EXAMINER

NGUYEN, JENNIFER T

ART UNIT

PAPER NUMBER

2674

DATE MAILED: 03/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/893,985

Applicant(s)

EU, JUNG-TAECK

Examiner

Jennifer T Nguyen

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2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is responsive to amendment filed on 12/30/2003.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaedani et al. (U.S. Patent No. 6,064,360) in view of Moon (U.S. Patent No. 5,793,346).

Regarding claim 1, referring to Figs. 1 and 4, Sakaedani teaches a discharging apparatus for a liquid crystal display including a plurality of liquid crystal pixel cells (FET), each of the liquid crystal cells (FET) being arranged at an intersection between one of a plurality of gate lines (32) and one of a plurality of data lines, and switching devices (31) for driving the liquid crystal cells in response to a signal from each gate line (32), the discharging apparatus (35) comprising: a first gate voltage supply line (V_{gh}); a second gate voltage supply line (V_{gl}); a power supply line (V_{dd}); gate driver circuitry (33) for selectively applying to the gate lines first and second gate voltages supplied from the first (V_{gh}) and second (V_{gl}) gate voltage supply lines, respectively; and a discharge circuit (35) to discharge the first gate voltage supply line and the second gate voltage supply line, thereby discharge voltages on the gate lines (32) (col. 3, lines 57-67, col. 4, lines 1-67, and col. 5, lines 1-15).

Sakaedani differs from claim 1 in that he does not specifically teach the discharge circuit for sensing a power-off condition of the power supply line to short circuit when the power-off

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condition is sensed. However, referring to Fig. 4, Moon teaches a discharge circuit (40) for sensing (41) a power-off condition of the power supply lines to short circuit (M1) the voltage supply line when the power-off condition is sensed (from col. 3, line 59 to col. 4, line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the discharge circuit for sensing a power-off and the short circuit as taught by Moon in the system of Sakaedani in order to allow the gate voltage is discharged at a high speed to rapidly discharge a voltage charged in the liquid crystal cell, thereby reducing a residual image upon power-off.

Regarding claim 2, Sakaedani teaches the first gate voltage (V_{gh}) is a positive gate high voltage, and the second gate voltage (V_{gl}) is a gate low voltage, and the gate low voltage is negative relative the positive gate high voltage (col. 4, lines 1-5).

Regarding claim 3, Sakaedani teaches the discharge circuit includes: power-off sensing circuitry for sensing the power-off condition of the power supply line (V_{dd}); and a switching device (37) for short-circuiting the first and second gate voltage supply lines upon power-off in response to a control signal from the power-off sensing circuitry (col. 4, lines 6-67 and col. 4, lines 1-15).

Regarding claim 4, Sakaedani teaches the discharge circuit (35) includes: a capacitor (C2) for charging to a desired voltage when a power voltage is being applied from the power supply line and discharging the charged desired voltage upon the power-off condition; and a switching control device (40) for controlling the switching device in response to the desired voltage discharged from the capacitor (col. 4, lines 34-67 and col. 5, lines 16).

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Regarding claim 5, Sakaedani teaches the desired voltage charged in the capacitor (C2) comprises a voltage difference between the gate high voltage (V_{gh}) and the power voltage (V_{dd}), and the capacitor discharges the desired voltage upon the power-off condition (col. 4, lines 34-67 and col. 5, lines 16).

Regarding claim 7, Sakaedani teaches the discharge circuit (35) is provided on a printed circuit board and connected to the gate driver circuitry (col. 5, lines 26-33).

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaedani et al. (U.S. Patent No. 6,064,360) in view of Moon et al. (U.S. Patent No. 5,945,970).

Regarding claim 6, Sakaedani teaches all the limitations of the claimed invention and further teaches wherein the switching device (37) is a NPN-type transistor and the switching control device (40) is a NPN-type transistor (col. 5, lines 16-37).

Sakaedani differs from claim 6 in that he does not specifically teach the switching control device transistor is a PNP-type. However, referring to Fig. 9, Moon teaches a switching control device transistor is a PNP-type (T4) (col. 7, lines 18-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the switching control device transistor is a PNP-type as taught by Moon in the system of Sakaedani in order to provide a better charge carrier to the switching device in response to the desired voltage discharged from the capacitor.

5. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Jennifer T. Nguyen** whose telephone number is **703-305-3225**.

The examiner can normally be reached on Mon-Fri from 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard A Hjerpe** can be reach at **703-305-4709**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

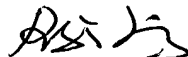
Washington, DC. 20231

Or faxed to: 703-872-9306 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, sixth-floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is 703-306-0377.

JNguyen
3/12/2004


REGINA LIANG
PRIMARY EXAMINER